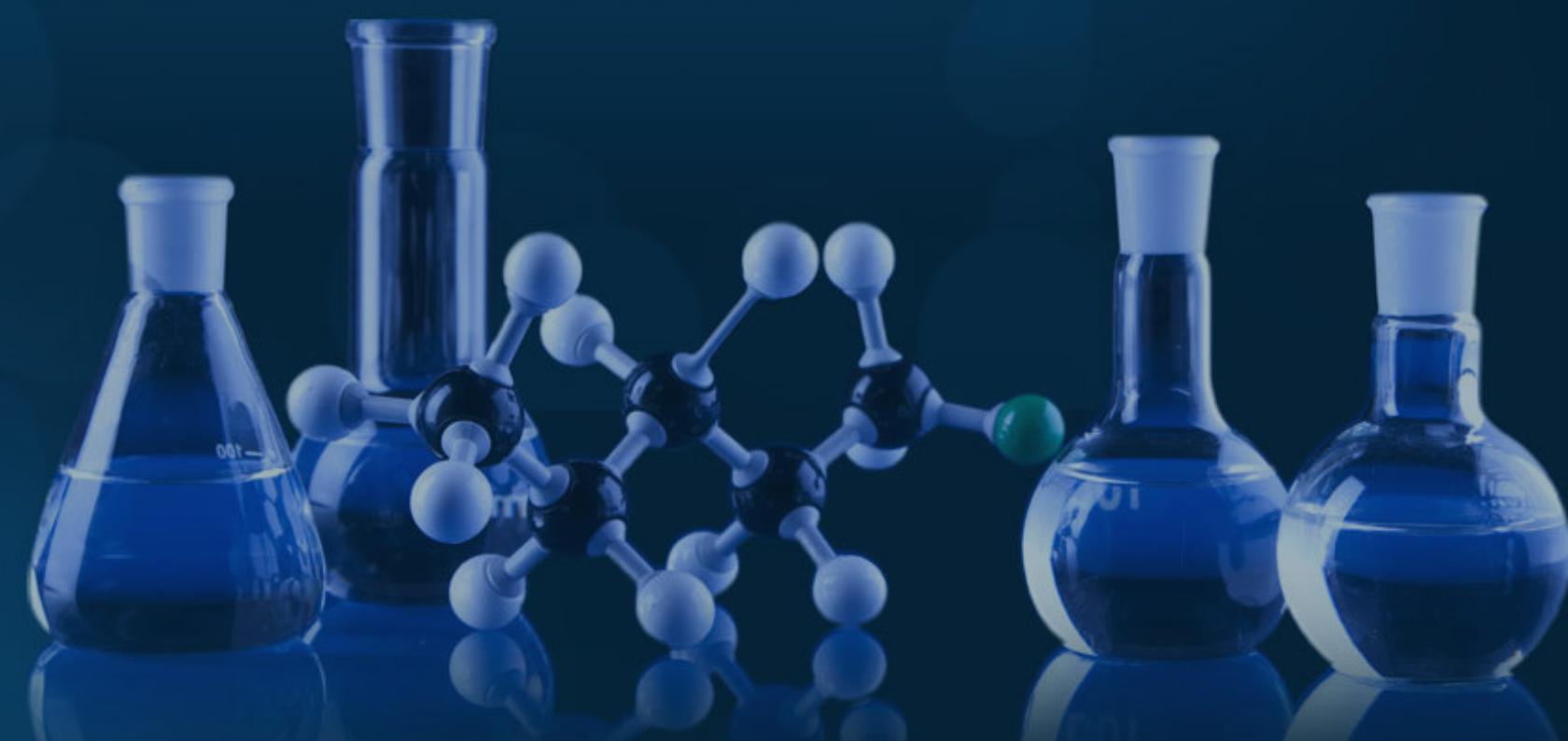




## ARL is an Authority on Nutrition and the Science of Balancing Body Chemistry Through Hair Tissue Mineral Analysis!

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# Hyperthyroidism and Hair Analysis

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## Hyperthyroidism and Hair Analysis

Hyperthyroidism can be a very confusing condition to assess. Symptoms, temperature tests and blood tests may not offer a complete picture. Regulation of the thyroid gland is complex. Understanding hair analysis may help clarify what is occurring.

### Thyroid Physiology

The thyroid gland secretes three hormones. Thyroxine, or T4, is the most abundant. The others are tri-iodothyronine or T3 and calcitonin. T3 is four times more powerful than T4, but much less of it is secreted. Some T4 is converted to T3 in peripheral tissues. Calcitonin lowers calcium in the body.

Hormone secretion is regulated by pituitary TSH, or thyroid-stimulating hormone and hypothalamic TRF, or thyroid-releasing factor. Cyclic AMP is also considered a secondary messenger in the regulation of thyroid activity.

### What Is Hyperthyroidism?

Hyperthyroidism refers to symptoms of excessive thyroid hormone activity. This may be due to excessive secretion of the hormones, or excessive tissue effects of the hormone.

Medical causes of hyperthyroidism are often unclear. Graves' disease is a toxic diffuse goiter. Plummer's disease is a toxic nodular goiter. Neither name explains the cause. The word toxic means blood thyroid hormone levels are elevated. Enlargement or nodules can also occur without excessive hormone production.

Tumors of the thyroid gland may or may not produce excessive hormones. A pituitary tumor may overstimulate the thyroid gland. Acute stress can cause extreme hyperthyroid symptoms. Some cases may be related to autoimmune antibodies that overstimulate the thyroid gland.

Symptoms of hyperthyroidism include nervousness, weakness, sensitivity to heat, sweating, restlessness, weight loss, increased appetite, fine tremors, palpitations and often bulging eyeballs. Other symptoms include diarrhea, a high pulse rate and other heart problems. A high body temperature is the basis for the temperature test for thyroid activity. However, adrenal dysfunction can also affect body temperature.

### Fast Oxidation And Hyperthyroidism

Those familiar with the oxidation types will notice the symptoms of hyperthyroidism correspond to the symptoms of fast oxidation. These include a fast pulse, nervousness, irritability, sweating, diarrhea, sensitivity to heat and tremors. Fast oxidation is caused by excessive activity of the sympathetic nervous system. Thyroid and adrenal gland activity increases. However, hyperthyroid symptoms can also occur in slow oxidizers.

### Copper And The Thyroid Gland

Copper has an intimate relationship with thyroid activity. Copper enhances biogenic amine production. This can enhance metabolic activity. Oftentimes slow oxidizers with copper toxicity appear much like fast oxidizers.

Copper toxicity causes an elevation of tissue calcium and magnesium. This can affect cell membranes and may impair the transport of thyroid hormones or other substances into the cells. A feedback mechanism may then cause increased thyroid hormone secretion to correct a perceived cellular deficiency.

The confusing aspect of copper toxicity is that the hair analysis will usually reveal a slow oxidation rate. However, the patient may have symptoms of hyperthyroidism. Serum T3, T4 and/or TSH may be abnormal. The patient may undergo medical therapy for hyperthyroidism. This can include surgical removal of part of the thyroid or irradiation of the thyroid.

### Other Nutrients

Manganese, iodine and tyrosine are all required for the synthesis of thyroxine. Potassium is needed to sensitize the tissues to thyroid hormone. Cyclic AMP and many enzymes are also required for thyroid function.

Toxic metals may affect the thyroid in various ways. Cadmium toxicity can increase the metabolic rate. Excessive cadmium can raise the tissue sodium level, which in turn lowers the calcium and magnesium level. This can contribute to a fast oxidation condition. Low tissue calcium and magnesium may allow excessive thyroid hormone to enter the cells. The excess hormone can produce the symptoms of hyperthyroidism, *even though thyroid blood tests may be normal*.

This situation can produce confusion. The blood tests will not match the symptoms. A hair analysis may reveal a fast oxidation rate. Cadmium may or may not be revealed on the hair mineral analysis. Cadmium may be sequestered in organs such as the kidneys, not in the hair. Many times several months on an individualized nutrition program are needed before the toxic metal is mobilized and revealed on the test.

Other heavy metals or toxic chemicals may affect thyroid activity by competing with vital nutrients or poisoning various metabolic pathways.

### Correction Of Hyperthyroidism

If the cause of hyperthyroid symptoms is a fast oxidation rate, a diet and supplement program for fast oxidizers may bring relief. If the cause is copper toxicity, a tumor or another toxic condition, a different nutrition program or approach is needed. Stress from any cause may also contribute to hyperthyroid symptoms. In summary, both slow and fast oxidizers can develop symptoms of hyperthyroidism. No single test may reveal the entire picture. Hair analysis may help determine the cause, reduce confusion and perhaps may help avoid invasive treatments for hyperthyroidism.

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